Bandolier 50

What do we think?
What do we know?
What can we prove?

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Bandolier recently had a little party to celebrate starting its fourth year of publication and its 50th issue. We couldn't invite you all, but you can at least see the great birthday cake you missed. Our celebration this month includes about 50 NNTs reprised from previous issues (plus more on the net).

In addition there are some thought-provoking pieces. Opposite is a report on some great cohort studies which give strong evidence that mild but frequent exercise can have dramatic differences in mortality - not just from arterial disease. But the sting is in the tail. On the last page we look at some information on how we as individuals can be overoptimistic about how this information affects us as individuals. ***You*** need to walk, ***I*** just want to watch the football match!

The meat in this month's ***Bandolier*** is from some great clinical trials, great because they are well done and large. So there are NNTs on real outcomes of treatment of benign prostatic hyperplasia. There is also a puzzle. ***Bandolier*** has been seeking out straightforward information on contraception - not complicated stuff like thrombosis, but just how well each of the contraceptive methods work. Awful hard to find, but we have found some numbers.

In this issue

Benefits of cohort studies

Is ***Bandolier*** obsessed with systematic reviews of randomised controlled trials? Surely not! Systematic reviews and meta-analysis may be the best way of assessing the effectiveness of interventions, but other study architectures can help understanding, especially when more than one study points in the same direction for the same effect.

Cohors, cohortis

For the classically minded we have previously given the definition of a cohort (***Bandolier*** 24). This might conjure up a picture of Roman legionaries tramping to the limits of the Empire (and if you want to see just how good their shoes were, check out some of the museums along Hadrian's Wall).

The point, though, is that they did walk everywhere, and up until quite recently daily walks to work or school of several miles were not remarkable. They are now, which is why a study of the effects of walking in non-smoking retired men in Hawaii [1] is important.

What a difference a mile makes

The study examined 707 non-smoking retired men of Japanese ancestry aged 61 to 81 years who were enrolled in the Honolulu Heart Program, which has been going since 1965. When they enrolled between 1980 and 1982 (then aged 45 to 68 years) they had a physical examination. They were asked about the average distance walked each day.

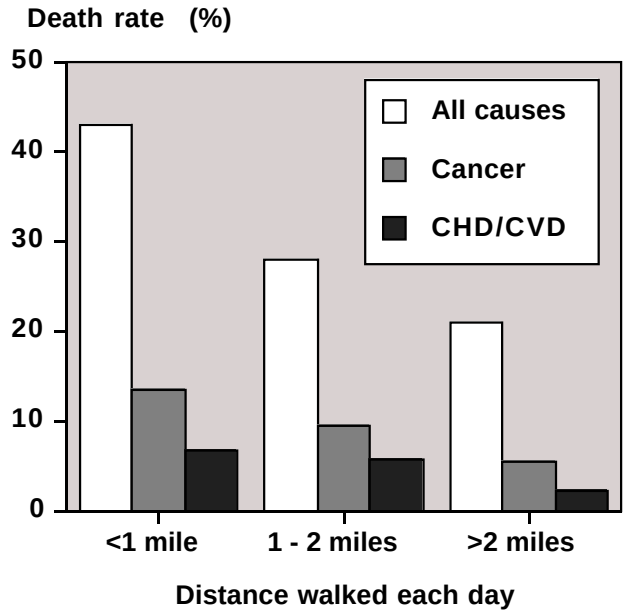
Results

The average distance walked each day was 1.8 miles (2.9 km). In the 12 years of follow up there were 208 deaths - 33 from heart disease, 19 from stroke, 68 from cancer and 88 from other causes. The death rate was examined according to whether men walked less than 1 mile, 1 to 2 miles, or more than 2 miles a day.

There were no differences between these three groups in terms of cholesterol, HDL, weight, hypertension, diabetes, diet or alcohol consumption. After 10 years, walking patterns were checked, and confirmed that men, by and large, maintained their walking patterns.

The less men walked, the more likely they were to die (Figure). The reduction in mortality came not just from reduced heart disease or stroke, but was also from cancer and other causes of death. The risk of death in men who walked less than 1 mile a day was 1.8 times that of men who walked more than 2 miles a day.

Death rate over 12 years according to average distance walked each day



Put another way, the 21% chance of dying over 12 years in men who walked more than 2 miles was reached in just seven years in men who walked less than 1 mile, and in 10 years in those who walked 1-2 miles a day.

It is even possible to put a crude NNT on it. If 43% of men who walked less than 1 mile a day died over 12 years, compared with 22% of those who walked more than 2 miles, the NNT is 1/(0.43-0.22) = 4.8. That is for every five men who walk at least two miles a day, one fewer will die over 12 years compared with those who walked less than one mile a day.

Nature or nurture

Does the inverse relationship between physical activity or walking and mortality hold just for men in Hawaii? A comprehensive study of twins in Finland tells us that activity has effects beyond genetics, and for women as well as men.

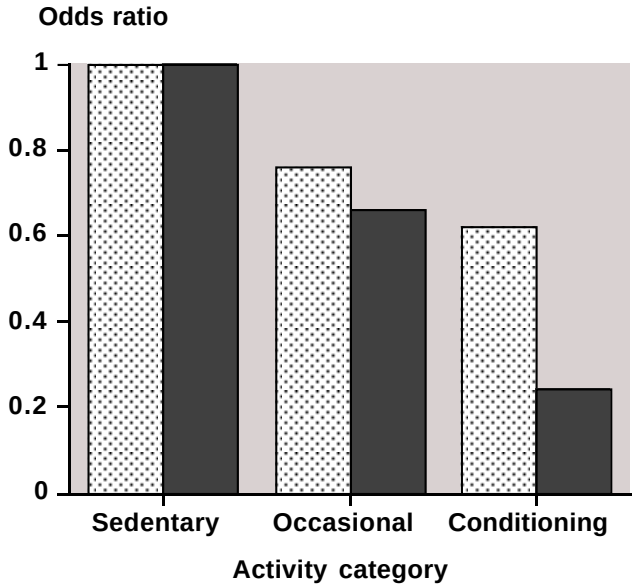
The study [2] examined the physical activity of just under 8,000 male and 8,000 female twins in 1975 (all born before 1958). Exclusions were chronic disease and deaths from injuries, suicide and homicide. After a comprehensive questionnaire subjects were classified into three broad bands of physical leisure activity:

- ◊ Sedentary subjects - not participating in leisure time physical activity.
- ◊ Occasional exercisers - participated in physical activity less than six times a month.
- ◊ Conditioning exercisers - exercising at least six times a month for a mean duration of 30 minutes with an intensity corresponding to vigorous walking or jogging.

Results

Overall the death rate between 1977 and 1994 was 12% for those who were sedentary, 7.4% for occasional exercisers, and 4.9% for conditioning exercisers. Twin pairs discordant for death were examined to determine whether mortality of

Risk of death over 18 years for 286 male and 148 female twin pairs



physically active subjects differed from that of their sex- and age-matched sedentary siblings. The result (Figure) showed that physical activity conferred a lower risk of death (odds ratio below 1) when compared with those who were sedentary in 1975 and adjusted for baseline smoking occupational group and alcohol use.

Comment

These studies demonstrate the benefit of cohort studies in identifying risk factors. The direction and magnitude of the effect of moderate exercise is similar in both studies: over 12 years walking two miles a day reduced the risk of death by half in the Hawaiian study, while in Finland over 17 years moderate exercise reduced the risk by 60%. Two different studies, in different populations, using different cohorts, but with much the same answer.

Encouraging people to walk or take moderate exercise is likely to benefit their health - and the magnitude of that benefit is large. ***Bandolier*** calculated an NNT of about 5 for the Hawaiian study. Compare that to NNTs of 10 at best for statins in secondary prevention.

This might be useful information in the new Health Service. With more involvement of Local Authorities, perhaps more can be done to develop safe, well-lit, and pleasant places to walk. If anyone wants to know how this might be done, take a day trip and see some of the delightful small Dutch towns with their traffic-free streets and interesting town-centres.

Finally it is good to report that people are already acting on this sort of information. There is one general practice in the UK which has already received a grant to study the benefits of walking when prescribed by general practitioners.

References:

1 AA Hakim, H Petrovitch, CM Burchfield et al. Effects of Walking on mortality among nonsmoking retired men. New England Journal of Medicine 1998 338: 94-9.

2 UM Kujala, J Kaprio, S Sarna, M Koskenvuo. Relationship between leisure-time physical activity and mortality. The Finnish twin cohort. JAMA 1998 279: 440-4.

CONTRACEPTION NUMBERS

Many people accept that a contraceptive method is a bit like adverts seen for wood varnish on the TV - it does just what it says on the tin! We all accept that there will be some failures, but what are the relative failure rates for different methods? ***Bandolier*** has been digging for useful evidence on contraceptive methods.

Failure rates

Evidence on failure rates is hard to come by. A series of estimates are summarised in a cost effectiveness paper [1], and the results are given in the Table both as the annual percentage of failure, and as the number of women (out of 10,000) who would become pregnant in one year using particular methods. Information on the combined oral contraceptive pill from a summary of clinical trials [2] is also given.

Now this information on failure rates is probably less than perfect (for instance there was no definition of oral contraceptive). But it is the best we have been able to find; if you know of better data, let us know. We were also perplexed as to how to use the information about Persona, which is claimed to be 94% effective. Does this mean that if 10,000 women not using contraception would have 8,500 pregnancies, with Persona this would be 8,500 x 0.06 = 510?

Economic analysis

The economic analysis is interesting, but with a US slant the numbers are of little relevance to the UK. The conclusion was that over five years the copper-T IUD, vasectomy, contraceptive implant and injectable contraceptive were the most cost-effective options.

Combined oral contraceptive

A review of clinical trials with the combined oral contraceptive of 30µg ethinyloestradiol and 150µg desogestrel [2] does not say it is systematic, but implies that it contains all the trials. Trials vary from small (200 women) to huge (>10,000), with wide rates of irregular bleeding and adverse effects. It is possible to perform an overall average, and this shows the following in cycle 6:

- breakthrough bleeding - 1.1%
- spotting - 3.3%
- amenorrhoea - 2.9%
- nausea - 1.5%
- headache - 2.9%
- breast tenderness - 3.6%
- nervousness - 3.9%

Comment

When choosing a contraceptive method, women and men need good advice on both the effectiveness and the problems to make a properly informed choice. More and better information than this may be available, but ***Bandolier*** was not able to find any. Perhaps we didn't try hard enough, but we thought, perhaps naively, that this would be easy. It wasn't.

References:
1 J Trussell, JA Leveque, JD Koenig et al. The economic value of contraception: a comparison of 15 methods. American Journal of Public Health 1995 85:494-503.
2 K Fotherby. Twelve years of clinical experience with an oral contraceptive containing 30µg ethinyloestradiol and 150µg desogestrel. Contraception 1995 51:3-12.

Annual failure rates for contraceptive methods given both as a percentage failure in one year, and in the number of pregnancies per 10,000 women over one year.

Method	Failure rate (%)	Pregnancies per 10,000 women per year
None	85.00	8500
Cervical cap	30.00	3000
Sponge	30.00	3000
Spermicides	21.00	2100
Female condom	21.00	2100
Periodic abstinence	21.00	2100
Withdrawal	20.00	2000
Diaphragm	18.00	1800
Male condom	12.00	1200
Oral contraceptives	3.00	300
Progesterone-T IUD	2.00	200
Copper IUD	0.40	40
Injectable contraceptive	0.30	30
Tubal ligation	0.17	17
Combined oral contraceptive	0.08	8
Vasectomy	0.04	4

From [1] except combined oral contraceptive, calculated from [2].

BENEFIT AND HARM WITH FINASTERIDE

When even the New England Journal of Medicine has a paper with at least one number needed to treat in it, we know we are getting somewhere. This particular number is 15 - the number of men with BPH who need to be treated with finasteride for four years to prevent surgery or acute urinary retention. There is a typo in the confidence interval they quote, but excellent progress nonetheless.

Bandolier has reported on finasteride treatment for benign prostatic hyperplasia before, notably on the result of a meta-analysis showing that finasteride is effective in men with prostate volumes of less than 40 mL (***Bandolier*** 46). We also showed some NNTs and NNHs based on one RCT with two-year outcomes. We now have good data from a large RCT with four year outcomes to confirm those results [1].

Study

3040 men with moderate to severe urinary symptoms and enlarged prostate glands were treated with 5 mg finasteride or placebo daily for four years in a randomised, double-blind trial of high quality. It involved clinic visits every four months for symptom scoring and clinical examination. Men with suspected or proven prostate cancer were excluded.

Benefits

Finasteride did its usual job of reducing symptom scores (an average fall of 3 points from a baseline of 15), prostate volume (by 18% on average over four years, compared with a 10% increase with placebo), and increasing urinary flow (by 2 mL/sec from a baseline of 11 mL/sec). But there were also data on men who progressed to acute retention, surgery, and on adverse effects. In the Table we give both the NNTs and NNHs, and the actual rates for benefits and harms.

Finasteride reduced the number of men with acute retention, either spontaneous or precipitated by previous surgery or urinary tract infection, with an NNT of 26. To prevent a man having surgery, the NNT was 18, and for both it was 15. So 15 men with BPH have to be treated with finasteride for four years to prevent one of them having surgery or acute urinary retention. These figures are the same as, or a better than those from an earlier, smaller, trial (***Bandolier*** 46).

Harms

The report also gives good estimates of possible harms associated with treatment. For instance, in this group of men with a mean age of 64 years at baseline, about 9% became impotent over four years. But 13% became impotent with finasteride, giving a number needed to harm of 23. Other harms are given in the Table. The overall incidence of prostate cancer was 5% in each group in the intensive study.

Comment

This type of information is invaluable in informing men of their options if they have benign prostatic hyperplasia and moderate to severe symptoms. Some will want surgery, some medical treatment, while others will decide that the risks of harm from treatment outweigh the benefits for them. The great thing is that we can now begin to put numbers on the benefits and the harms - which makes it easier to give information to men, and for men to make decisions.

Reference:

1 JD McConnell, R Bruskewitz, P Walsh et al. The effect of finasteride on the risk of acute urinary retention and the need for surgical treatment among men with benign prostatic hyperplasia. New England Journal of Medicine 1998 338: 557-63.

Numbers needed to treat and to harm with finasteride treatment for four years in men with BPH

Outcomes	Percentage of men with an event over 4 years with: Finasteride	Placebo	
Benefit			**NNT (95% CI)**
Acute urinary retention	2.8	6.6	26 (19 to 43)
Surgery	4.6	10.1	18 (14 to 27)
Retention or surgery	6.6	13.2	15 (11 to 22)
Harm			**NNH (95% CI)**
Impotence	13.2	8.8	23 (15 to 45)
Decreased ejaculate	5.1	1.3	27 (20 to 40)
Decreased libido	9.0	6.0	33 (21 to 89)
Breast enlargement	2.3	0.2	47 (34 to 76)
Ejaculation disorder	1.0	0.2	127 (75 to 410)
Breast tenderness	1.1	0.4	138 (74 to 952)
Rash	1.0	0.3	152 (81 to 1237)

Correspondence

from Teresa K Teal, Northwick Park Hospital, Harrow
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Dear ***Bandolier***,

We are pleased that ***Bandolier*** has now highlighted the important subject of blunders that affect diagnostic testing [1].

Unfortunately, the analytical blunder rate quoted for external quality assurance [EQA] samples in our study [2] was incorrect. The figure of 0.35% per analyte was the overall blunder rate, whereas the analytical blunder rate was less than 0.1%; more than one third of the errors were transcription mistakes and a further third were due to preanalytical errors.

The consistency in blunder rates quoted in your article is remarkable considering the different methods used to collect and detect blunders in the various studies [2,3,4,5]. Similar rates have also been reported by biochemists in two studies using QA samples [6,7] and in another survey using patient samples in a stat laboratory [8].

From these disparate studies an analytical blunder rate of about 0.05% emerges with overall blunder rates of 0.35% and about 1.0% for patient and QA samples respectively. Higher detection rates will occur in periods of intense scrutiny compared to routine vigilance. The precise way in which blunders are classified will also affect their occurrence. Both these factors may have contributed to the higher and unacceptable blunder rates detected in some laboratories in the Australian study [5].

Extension of the traditional method of assessing QA data in Clinical Biochemistry laboratories is a realistic way of monitoring blunder rates. However, many of the errors affecting EQA samples are due to pre- and post-analytical steps which do not occur in the processing of patient samples in fully automated and computerised laboratories.

We believe that all clinical laboratory disciplines should monitor and review blunders that affect patient samples as well as those reported by EQA schemes as part of their routine QA procedure. This will enable resources to be targeted to problem areas. It is also essential that users of the service are aware that blunders can, and will always occur, even in well managed laboratories.

References

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2 Lapworth R, Teal TK. Laboratory blunders revisited. Annals of Clinical Biochemistry 1994 2**3**: 78-84.
3 Witte DL, Van Ness SA, Angstadt DS, Pennell BJ. Errors, mistakes, blunders, outliers, or unacceptable results: how many? Clinical Chemistry 1997 4**3**: 1352-6.
4 Chambers AM, Elder J, O'Reilly D St J. The blunder rate in a clinical biochemistry service. Annals of Clinical Biochemistry 1986 2**3**: 470-3.
5 Khoury M, Burnett L, Mackay MA. Error rates in Australian chemical pathology laboratories.. Medical Journal of Australia 1996 1**65**: 128-130.
6 Thijssen JHH. Immunoassays in Endocrinology. Communication in Laboratory Medicine 1992 3: 146-151.
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8 Plebani M, Carraro P. Mistakes in a Stat laboratory: type and frequency. Clinical Chemistry 1997 43: 1348-51.

Telemedicine & Telecare

Bandolier is aware of the growing interest in Telemedicine and Telecare and is sufficiently intrigued to want to find out more. This resolve was further strengthened by the fact that Wales leads the field in the UK; a minion was duly told off to attend the "Wales Telemedicine Conference: Bringing Services to the People" to be held in the Cardiff International Centre on the 27/28th April. Minion will forthwith begin planning for ***Bandolier's*** entry into the field.

'Minion' has duly obliged and ***Bandolier*** will be pleased to accept enquiries and provisional bookings for its very own ***Bandolier*** Conference on "The Role of Telemedicine in Primary Care". This will be held on Fri 10th and Sat 11th July in the Eynsham Hall Conference Centre where we held our first three conferences.

What, some of you may ask, is telemedicine, and what can it do for me and my patients?

Telemedicine can be widely defined as any health care or health education activity that involves either a clinician/carer/teacher or a patient/carer/pupil who are separated in space (and possibly also in time). Alternatively it has been described as any application which electronically reduces the effects of distance in the provision of health care.

Geography is now history

This clearly makes Telemedicine a part of the wider field of information and communication technology. Therein lies a possible barrier to the ready acceptance of the developing technologies. 'IT' has generally had a rather poor press in the NHS and this has, in part, contributed to what that learned journal the Economist recently described as "perhaps the clearest example of a medical technology whose time ought to have come but hasn't". The article goes on to say " Depressingly, the slow adoption of new technology in ....hospitals is perhaps only to be expected. Doctors are often so busy trying to keep up with new discoveries about drugs and diseases that they feel they have no time to learn how to use computers as well. The new systems are hard to install and exploit."

It was ever thus. The Times reported in 1834 that the medical profession was unlikely ever to start using the stethoscope "because its beneficial use requires much time and gives a good bit of trouble".

Bandolier deplores this negative view of the medical profession and does not believe that it applies to its own readers. Accordingly it feels that the time is appropriate to make a dispassionate examination of the current developments in 'telecare' and to try to judge if "its time has yet come". We hope that many of you will wish to join us in this endeavour.

Condition	Treatment	Duration of treatment	Comparator	Outcome	NNT (95% CI)
Acute otitis media	Antibiotics	short course	no antibiotics or tympano-centesis	Absence of presenting signs and symptoms at 7-14 days	7
acute sprains etc	topical NSAID (good)			>50% pain relief	2+
AIDS	indinavir (triple therapy with nucleosides)	38 weeks	nucleosides plus placebo	first clinical event (AIDS or death)	19 (12 to 50)
Angina	bisoprolol	4 to 6 weeks	placebo	prevention exercise induced angina	2.8 (1.9 to 5.0)
Angina	isosorbide dinitrate	4 to 6 weeks	placebo	prevention exercise induced angina	5.0 (2.8 to 21)
Anticipated preterm delivery	Corticosteroids	before delivery	no treatment	Risk of fetal RDS	11 (8 to 16)*
Arthritis	glucosamine	3 to 8 weeks	placebo	improved symptoms	5 (3.5 to 8.9)
Asthma (childhood)	nurse-led management training programme	4 weeks	usual care	readmission	6.1 (3.8 to 15)
Asthma (childhood)	budesonide and formoterol	one year	budesonide alone	free of severe exacerbation for one year	11 (6.6 to 34)
Back pain	epidural steroid			>75% relief at 60 days	6
Childhood depression	Antidepressants	not stated	placebo	Improved	not effective
Diabetic neuropathy	anticonvulsants			>50% pain relief	2.5
Dementia	gingko	one year	placebo	ADAS-Cog 4 points better	7.9 (4.2 t0 67)
Dog bites	Antibiotics	short course	placebo	Infection	16 (9 to 92)*
Erectile dysfunction	alprostadil (transurethral)	3 months	placebo	erection enabling intercourse	2.3 (2.1 to 2.6)
Esophageal variceal bleeding	Endoscopic ligation	intervention	sclerotherapy	Prevention of one re-bleeding episode	4
Flu	vaccination			no flu	23
Fungal nail infection	Terbinafine	12/24 weeks	griseofulvin	Cured at 48 weeks	2.7 (1.9 to 4.5)*
Gastric ulcer with NSAID - prevention	misoprostol	4 weeks	placebo	presence of gastric ulcer	13
Head lice	Permethrin	14 days	placebo	Cure	1.1 (1.0 to 1.2)*
Herpes zoster	Acyclovir	5-10 days	placebo	Prevention of post herpetic neuralgia at 6 months	not effective
Hip fracture prevention	calcium and vitamin D	3 years	placebo	prevent one fracture	20 (13-57)
Homelessness	critical time intervention	18 months	usual services only	homeless in 18th month	6.9 (3.5 to 284)
Hypertension in the elderly	Drug treatments	at least 1 year	no treatment	Overall prevention of cardiovascular event over 5 years	18 (14 to 25)
Lipid lowering					
primary prevention	various	5 years	no treatment	prevent one myocardial infarction or cerebrovascular death	69 (54 to 99)
secondary prevention	various	5 years	no treatment	prevent one myocardial infarction or cerebrovascular death	16 (13 to 19)
primary prevention	statins	mean 4 years plus	placebo	all bad things	35 (24 to 63)
secondary prevention	statins	mean 2.9 years	placebo	all bad things	11 (10 -13)

Condition	Treatment	Duration of treatment	Comparator	Outcome	NNT (95% CI)
Major GI bleeding and NSAID use	Misoprostol	6 months	placebo	Prevent any GI complication	166 (97 to 578)*
MI	ACE inhibitor [AIRE trial]			death within 6 months	18
Migraine	Subcutaneous sumatriptan	single dose	placebo	Headache relieved at 2 hours	2.0 (1.8 to 2.2)*
Migraine	Oral sumatriptan	single dose	placebo	Headache relieved at 2 hours	2.6 (2.3 to 3.2)*
Moderate or severe postoperative pain	Paracetamol 1000 mg	single dose	placebo	At least 50% pain relief	3.6 (3.0 to 4.4)
Myocardial infarction	Aspirin plus streptokinase	1 h i.v. infusion of streptokinase, 1 month of oral aspirin	no treatment	Five-week vascular mortality, prevent one death	20*
Myocardial infarction and diabetes	insulin (intensive schedule)	three years	usual care	one year mortality	14 (7.3 to 164)
neuropathic pain	antidepressants			>50% pain relief	2.5
Oesophagitis	omeprazole	8 weeks	ranitidine	endoscopic healing rate	3.3
Oesophagitis	omeprazole	1 year	ranitidine	maintenance of endoscopic healed erosive gastritis	2.8
Peptic ulcer	Triple therapy	6-10 weeks	histamine antagonist	H pylori eradication	1.1 (1.08 to 1.15)
Peptic ulcer	Triple therapy	6-10 weeks	histamine antagonist	Ulcers remaining cured at one year	1.8 (1.6 to 2.1)
Peptic ulcer	Triple therapy	6-10 weeks	histamine antagonist	Ulcer healing at 6-10 weeks compared with histamine antagonist	4.9 (4.0 to 6.4)
Peripheral artery disease	Naftidrofuryl	3 or 6 months	placebo	Pain free walking distance improved by 50% (1 year)	10.3 (6.3 to 29)*
Peripheral artery disease	Naftidrofuryl	3 or 6 months	placebo	Preventing critical cardiac events (1 year) compared with placebo	24 (13 to 266)*
Positive GP consultation	Positive GP consultation	2 weeks	negative consultation	get better in 2 weeks	4 (3 to 9)
postop pain	good oral analgesic (ibuprofen 400 mg)			>50% pain relief	2
Postoperative vomiting	Droperidol	single dose	placebo	Prevention over 48 hours in children undergoing squint correction	4.4 (3.1 to 7.1)

A FULLER LIST OF NNTS, PLUS REFERENCES APPEARS IN THE INTERNET VERSION OF BANDOLIER

MAKING TOUGH DECISIONS

It can't happen to me

All of us make decisions about things we do which have risk attached to them. We might choose to dive, or go hang-gliding, or ride a motorcycle, or smoke. Yet we are certainly aware that there are risks attached to all of these activities. If we were rational beings we might go through a process which included:

- identify possible options (car versus motorcycle)
- identify the consequences of each option
- evaluate the desirability or otherwise of each consequence
- estimate the likelihood of each consequence
- combine all these according to some rational decision rules.

But usually we don't. People show a consistent tendency to claim they are less likely than their peers to suffer harm, which is perhaps why apparently sensible people go diving and hang gliding, drive motorcycles, and smoke.

A review [1] of the literature on perceived risks is an enlightening, if none too easy read. It identifies unrealistic optimism as being a major contributor to why people do not use precautionary behaviours - with an underestimate of one's own risk and an overestimate of the risk of others as being contributory to this.

It argues that providing risk information is generally not sufficient to change behaviour. Other factors, such as the efficacy and costs of preventative behaviour, social pressure and perceived self-efficacy play a major role in helping people to change their behaviour. It is just not enough to give people the facts.

Giving the facts

But the way in which facts are given can make a big difference to an individual's choice of medical treatments [2]. A group of 100 outpatients were given information about cholesterol lowering and hypertension treatment (Helsinki heart study), and told that the medicine was free of side effects and that the treatment would have no cost to them.

Information was given in different formats, in the form of easily understood written statements. How this was done (it is given in an Appendix) was interesting in itself. But the formats were equivalent to relative risk reduction, absolute risk reduction, number needed to treat, average gain in disease free years in an average or a stratified format. The NNT format they chose was:

"Studies of a cholesterol-lowering pill showed that if 71 people took it for an average of just over 5 years, the medicine would prevent one of the 71 from having a heart attack. There is no way of knowing in advance which person that might be. Two people of the 71 would have heart attacks anyway, even though they took the pill."

and the relative risk reduction format was:

"A cholesterol-lowering pill was studied to see how it worked in reducing coronary artery disease (the disease that causes heart attacks). Persons in the group treated with this medicine had 34% fewer heart attacks than the non-treated group."

Giving the same information in a number of easily understood ways led to dramatic differences in the response of participants. For instance, for cholesterol lowering, 83% of participants would have the drug when data were presented as relative risk reduction, but only 31% when it was presented as number needed to treat.

Format	% Agreeing
Relative risk reduction	88
Absolute risk reduction	42
Number needed to treat	31
Gain in disease free years	40
Stratified gain	56

Comment

Bandolier is continually surprised that more has not been done to understand what underlies the effective communication of information. Why bother to get information if we can't use it properly? These are important tools in helping people make decisions about therapy or lifestyle changes. Particularly where the NNTs are high, as in lowering of blood pressure, or cholesterol, where one might consider that we are treating a population as much as a single person, it is important to recognise the effects that data presentation has. Whether people are being realistic or optimistic, they have views too. Perhaps we should do more studies of data presentation as well as of drugs and other interventions.

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